Section – B

(Short Answers)

Note: Answer any TEN of the following questions. Each question carries 05 marks.

Q.2 Verify distributive property of union over intersection, if $A = \{1, 2, 3, 4\}$, $B = \{3, 4, 5\}$ and $C = \{1, 5\}$

Q.3 If $x = \sqrt{2} + \sqrt{3}$ then find the conjugate of "x" and show that product of "x" with its conjugate is a rational number.

Q.4 Find x from the equation given by $c^x,\ d^{x-1} = a$

Q.5 Find the values of $a+b+c$ when $ab+bc+ca=4$ and $a^2+b^2+c^2=8$

Q.6 Find the 2nd polynomial when 1st polynomial is x^2-5x+6, their HCF is $x-3$ and LCM is $x^3-9x^2+26x-24$.

Q.7 Find the solution set of: $|3x-2| < x+5,\ \forall x \in IR$.

Q.8 Eliminate "x" by using formula in the equations $ax^2+bx+c=0$ and $px^2+qx+r=0$.

Q.9 In a circle of radius 5 cm, a chord measuring 8cm has been drawn, find its distance from the centre of the circle.

Q.10 Find the range and standard deviation of the numbers 10, 10, 25, 15, 30, 30

Q.11 Any point on the bisector of an angle is equidistant from its arms. Prove it.

Q.12 Define any ONE of the following terms and illustrate with figure.

(i) Secant of Circle

(ii) Circum – Circle of a Triangle

(iii) Parallelogram

Q.13 Take a ΔXYZ and draw the bisectors of its angles and show that they are concurrent.

Q.14 Use matrices to solve the equations: $x+2=6$ and $2x+7y=3$

Q.15 If $\sec\theta = \frac{17}{8}$, find the values of remaining trigonometric ratios by using "Identities".

Section – C

(Descriptive)

Note: Answer any TWO of the following questions. Each question carries 10 marks.

Q.16 (a) Factorize the following:

(i) $16x^4+97x^2y^2+81y^4$ (ii) $x^3+7x^2+14x+8$

OR

Simplify: $\frac{x+2y}{x^2-xy} \div \frac{x^2+4xy+3y^2}{x(x^2-y^2)}$

(b) A man standing on the top of a light house, 250m high, observes that the angles of depression of two ships on the opposite sides are of 60^0 and 30^0 respectively. If foot of the light house and ships are on a straight line, find the distance between the ships.

Q.17 (a) Prove that, if one pair of opposite sides of a quadrilateral are congruent and parallel, it is a parallelogram.

(b). One and only one circle can pass through any three non-collinear points. Prove it.

Q.18 (a) Solve the following by using completing the square method. $y^2-4y=y-6,\ (y \neq 0)$

(b) Prove that:

$$\frac{\cos x}{1+\sin x} + \frac{1+\sin x}{\cos x} = 2\sec x$$